10. An in vivo method of sealing air leaks in pulmonary tissues comprising the step of topically applying and curing the adhesive mixture of claims 1 to an air leak site in the pulmonary tissue.

11. An in vivo method to prevent post-surgical adhesions comprising the step of topically applying and curing the adhesive mixture of claims 1 to tissue surrounding a surgical site.

12. An in vivo method to seal tissue comprising the step of topically applying and bonding the adhesive mixture of claims 1 to tissue to prevent or control blood or other fluid leaks.

13. The adhesive composition of claim 1 wherein the second aqueous mixture is about 300–800 mg/ml of a crosslinking agent having a molecular weight in a range of about 5,000–15,000.

14. The adhesive composition of claim 13 wherein —LM— is a diester diradical of the formula —C(O)—$(CH_2)_2$—C(O)—.

15. The adhesive mixture of claim 1 wherein —LM— is a diester diradical of the formula, —C(O)—$(CH_2)_c$—C(O)— where c is an integer from 2–10 and where the aliphatic portion of the diradical may be saturated or unsaturated.

16. The adhesive composition of claim 15 wherein —LM— is a oligomeric diradical derived from polyglycolic acid.

17. A method of making a tissue adhesive consisting of the step of forming a mixture of

i) a first aqueous mixture of about 20–60 wt/vol % serum albumin in about 0.01–0.25 molar buffer at a pH in a range of about 8.0–11.0,

ii) a second aqueous mixture of about 50–800 mg/ml of a crosslinking agent having a molecular weight in a range of about 1,000–15,000, wherein the crosslinking agent is of the formula

G—LM—PEG—LM—G

wherein —PEG— is a diradical fragment represented by the formula

—O—(CH_2—CH_2—O—)$_a$—

where a is an integer from 20–300;

wherein —LM— is a diradical fragment selected from the group consisting of a carbonate diradical of the formula, —C(O)—, a monoester diradical of the formula, —$(CH_2)_b$C(O)— where b is an integer from 1–5, a diester diradical of the formula, —C(O)—$(CH_2)_c$—C(O)— where c is an integer from 2–10 and where the aliphatic portion of the diradical may be saturated or unsaturated, a dicarbonate diradical of the formula —C(O)—O—$(CH_2)_d$—O—C(O)— where d is an integer from 2–10, and an oligomeric diradical represented by the formulas —R—C(O)—, —R—C(O)—$(CH_2)_c$—C(O)—, or —R—C(O)—O—$(CH_2)_d$—O—C(O)— where c is an integer from 2–10, d is an integer from 2–10, and R is a polymer or copolymer having 1–10 monomeric fragments selected from the group consisting of lactide, glycolide, trimethylene carbonate, caprolactone and p-dioxanone; and

wherein —G is a leaving group selected from the group consisting of succinimidyl, maleimidyl, phthalimidyl, imidazolyl, nitrophenyl or tresyl, and

wherein a combination of the first and second mixtures is initially liquid and then cures on the surface of tissue to give a flexible, substantive matrix which bonds to the tissue and has a burst strength greater than about 10 mmHg.

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